



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/726,629	11/30/2000	Ajit V. Sathe	884.341US1	2086

21186 7590 02/11/2004

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER

THAI, XUAN MARIAN

ART UNIT	PAPER NUMBER
----------	--------------

2111

DATE MAILED: 02/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/726,629

Applicant(s)

SATHE ET AL.

Examiner

XUAN M. THAI

Art Unit

2111

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on September 30, 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 35-39, 42-48 and 51-72 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 35-39, 42-48 and 51-72 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 2111

DETAILED ACTION

3. This is in response to communications filed on September 30, 2003. Claims 1-34, 40-41, and 49-50 are canceled. Claims 59-72 are newly added. Claims 35, 36, 39, 42-45, 48, 51-54, and 56-57 are amended. Claims 35-39, 42-48 and 51-72 are now pending in the instant application.

4. The allowability of claims 41-43 and 50-52 are withdrawn in view of newly found prior art. Rejection base on the newly found prior art is detailed hereinafter.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 59-72 are rejected under 35 U.S.C. 102(b) as being anticipated by Bourdelaise et al. (USPN 5,109,320; Bourdelaise).

As per claims 59, 63, 65, and 69; Bourdelaise teaches an electronic package (e.g. Figs. 8-9) comprising: an IC package (65); a substrate (substrate 3); and a compressible connector (elements 59) to couple the die (2) or IC package (65) to the substrate; wherein the connector comprises a flexible support formed of electrically insulating material (e.g. cols. 8-9, lines 25-

Art Unit: 2111

55); and a plurality of elements form of electrically conductive material wire wads (e.g. see col. 1, lines 23-33 and col. 7, lines 55-col. 8, lines 1-17).

As per claims 60, 66 and 70; Bourdelaise discloses wherein the connector comprises a plurality of electrically conductive elements (e.g. button contacts) couple lands (contact pads) on the die (e.g. 2) to the corresponding lands (pads) on the substrate (e.g. 3) [see col. 1, lines 34-60 and col. 7, lines 55-col. 8, lines 1-17; col.s 9-10 see also figures 8, 9, 11, 12];

As per claims 61, 67 and 71; Bourdelaise discloses a compression element (compression means; e.g. 82, 80, 84 of fig. 8] to maintain electrical contact between the lands on the die or IC package and the lands on the substrate;

As per claim 62; wherein the compressing element is a lid (lid 82; fig. 8) comprising a member (e.g. element 80; fig. 8) in contact with the die or IC package and a support (e.g. 84; fig. 8) coupled to the substrate;

As per claims 64, 68 and 72; Bourdelaise the claimed invention as detailed with respect to claims 59, 65 and 69. Bourdelaise further teaches wherein the insulating support is formed of material from the group consisting of a plastic, a resin, and a polymer (col. 7, lines 60 et seq; col. 8, lines 1-17).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2111

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 35-39, 42-48, and 51-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scholz (USPN 5,329,423) in view of Smolley (USPN 4,581,679 or 4,574,331) or Bourdelaise et al. (USPN 5,298,686; Bourdelaise) and Akkapeddi et al. (USPN 5,334,029) and Kuozkowski ("The Electrical Conductivity and Breakdown Phenomena in Polyester Polymer-Quinoline Salt of Tetracyanoquinodimethane Composites") and Kang et al. (USPN 5,958,590).

As per claims 35, 44 and 53, Scholz discloses an electronic package (e.g. Figs. 3 & 4) comprising: a die or an IC package (46); a substrate (substrate 52); and a compressible connector (elements 48,50,54,56,58,60,62,64,66,68,70,72,74,76,78; see col. 5, lines 34-65) to couple the die or IC package to the substrate; wherein the connector comprises a flexible support formed of electrically insulating material (e.g. 70 and 78; see col.5, lines 43-53); and a plurality of elements form of electrically conductive material (e.g. bumps and socket layer; col. 5, lines 38-53); except for not disclosing that the electrically conductive material are from a group consisting of wire

Art Unit: 2111

wads, pins, blobs, lumps, particles *and* crystals. Scholz discloses bumps or blobs or lumps or particles (col. 5, lines 38-53). Scholz does not explicitly disclose wire wads or pins or crystals. However, wire wads, pins and crystals are well known conductive elements in the art. For example, Smolley discloses wire wads comprising of a compressible material (e.g. Abstract) for packaging construction for electronic circuit package elements, such as integrated circuit chip packages, to obviate the need for the use of solder. It would have been obvious to one of ordinary skill in the art to use compressible wads of conductive wire as taught by Smolley in the Scholz system because Smolley states that such wire wads offer high density, solderless assembly, high frequency performance and operation over a wide temperature range. The wire wads additionally offer very low resistance to current when their exposed ends are compressively engaged with surface contact pad areas. Furthermore, because of their ratio of diameter to length in compressed state is considerably larger than contacts previously known in the connector art and because of their random internal multi-contact composition, such wadded conductor elements have relatively low capacitance and inductance, and so they provide relatively low impedance for dynamic electronic circuit configurations, such as are used for high speed data processing and other high bandwidth applications; therefore, being advantageous. In another example, Akkapeddi discloses that it is known to provide pins within holes or vias in a plastic spacer (abstract). Further in another example, Kuozkowski and Kang et al. disclose that it is known to utilize electrically conductive crystals or particles in the polymer layer as to from electrical interconnections between electrical contacts on adjacent surfaces (Kang; abstract). Hence, it would have been obvious to one of ordinary skill in the art to utilize electrically conductive crystals as taught by Kuozkowski and Kang in the system of Scholz because it would

Art Unit: 2111

produce a higher electrical conductivity and can be processed at a lower temperature additionally it is environmentally safe and low in cost (col. 3, lines 45-55).

As per claims 36, 45 and 54, Scholz discloses wherein the connector comprises a plurality of electrically conductive elements (e.g. conductive bumps 58 and 60) couple lands (input/output pads 48 and 50) on the die (46) to the corresponding lands (traces 54 and 56) on the substrate (52) [see col. 5, lines 34-65 and col. 6, lines 32-54];

As per claims 37, 46 and 55, Scholz discloses a compression element (compression means; col. 6, lines 47-54] to maintain electrical contact between the lands on the die or IC package and the lands on the substrate;

As per claims 38 and 47, wherein the compressing element is a lid (cap mechanism; col. 5, lines 56-58) comprising a member in contact with the die or IC package and a support coupled to the substrate (see col. 6, lines 47-54);

As per claims 39 and 48, wherein the electrically conductive elements comprise a compressible material (see col. 5, lines 66-67).

As per claims 42 and 51, wherein the elements comprise a coating of electrically conductive material (Scholz; col. 3, lines 65 et seq. col. 4, lines 1-2).

As per claims 43 and 52, wherein the elements comprise material from the group consisting of aluminum, antimony, beryllium, bismuth, cadmium, carbon, chromium, copper, gold, indium, iron, lead, magnesium, manganese, molybdenum, nickel, palladium, platinum, silicon, silver, tin, titanium, tungsten, zinc, metal silicide, doped polysilicon, and plastic. Scholz, Smolley, Bourdelaise, Akkapeddi, Kuozkowski and Kang teach the majority of the listed elements use in forming the conductive elements of the claimed invention. Other elements not

Art Unit: 2111

specifically mentioned in the combination of Scholz, Smolley, Bourdelaise, Akkapeddi, Kuozkowski and Kang are also well known metals that possess electrically conductive properties therefore would be known to one of the ordinary skill in the art at the time the invention was made to make use any one of the metals in the formation of electrically conductive elements based on desirability, availability and costs.

8. Claims 35-36, 44-45 and 53-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karnezos (USPN 4,813,129) in view of Smolley (USPN 4,581,679 or 4,574,331) or Bourdelaise et al. (USPN 5,298,686; Bourdelaise) and Akkapeddi et al. (USPN 5,334,029) and Kuozkowski ("The Electrical Conductivity and Breakdown Phenomena in Polyester Polymer-Quinoline Salt of Tetracyanoquinodimethane Composites") and Kang et al. (USPN 5,958,590).

As per claims 35, 44 and 53, Karnezos discloses an electronic package (e.g. Figs. 3 & 4) comprising: a die or an IC package (26); a substrate (substrate 12); and a compressible connector (elements 16,32,28,20; see abstract; col. 4, lines 45-67 and col. 5, lines 1-67) to couple the die or IC package to the substrate; except for not disclosing that the electrically conductive material are from a group consisting of wire wads, pins, blobs, lumps, particles *and* crystals. Karnezos discloses buttons or blobs or lumps (abstract; figs. 2-3; col. 3, lines 14-16; col. 4, lines 45-67 and col. 5, lines 1-67). Karnezos does not explicitly disclose wire wads or pins or particles or crystals. However, wire wads, pins, particles and crystals are well known conductive elements in the art. For example, Smolley discloses wire wads comprising of a compressible material (e.g. Abstract) for packaging construction for electronic circuit package elements, such as integrated circuit chip packages, to obviate the need for the use of solder. It would have been obvious to

Art Unit: 2111

one of ordinary skill in the art to use compressible wads of conductive wire as taught by Smolley in the Karnezos system because Smolley teaches that such wire wads offer high density, solderless assembly, high frequency performance and operation over a wide temperature range. The wire wads additionally offer very low resistance to current when their exposed ends are compressively engaged with surface contact pad areas. Furthermore, because of their ratio of diameter to length in compressed state is considerably larger than contacts previously known in the connector art and because of their random internal multi-contact composition, such wadded conductor elements have relatively low capacitance and inductance, and so they provide relatively low impedance for dynamic electronic circuit configurations, such as are used for high speed data processing and other high bandwidth applications; therefore, being advantageous. In another example, Akkapeddi discloses that it is known to provide pins within holes or vias in a plastic spacer (abstract). Further in another example, Kuozkowski and Kang et al. disclose that it is known to utilize electrically conductive crystals or particles in the polymer layer as to from electrical interconnections between electrical contacts on adjacent surfaces (Kang; abstract). Hence, it would have been obvious to one of ordinary skill in the art to utilize electrically conductive crystals as taught by Kuozkowski and Kang in the system of Karnezos because it would produce a higher electrical conductivity and can be processed at a lower temperature additionally it is environmentally safe and low in cost (col. 3, lines 45-55).

As per claims 36, 45 and 54, Karnezos discloses wherein the connector comprises a plurality of electrically conductive elements (e.g. conductive buttons 16) couple lands (pads 28) on the die or IC package to the corresponding lands (traces) on the substrate (26) [see cols. 4-5];

Art Unit: 2111

9. Claims 56-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Debenham et al. (USPN 6,365,421; hereinafter Debenham) in view of Scholz (USPN 5,329,423), and in further view of Smolley (USPN 4,581,679 or 4,574,331) and Akkapeddi et al. (USPN 5,334,029) and Kuozkowski ("The Electrical Conductivity and Breakdown Phenomena in Polyester Polymer-Quinoline Salt of Tetracyanoquinodimethane Composites") and Kang et al. (USPN 5,958,590).

As per claim 56, Debenham teach a data processing system (fig. 1) comprising: a bus (18); a processor (12); a memory (14); a display (24). Debenham differs from the current invention by not showing an electronic assembly comprising: an IC package; a substrate; and a compressible connector to couple the IC package to the substrate. However, Scholz teaches an electronic package (e.g. Figs. 3 & 4) comprising: an IC package (46); a substrate (substrate 52); and a compressible connector (elements 48,50,54,56,58,60,62,64,66,68,70,72,74,76,78; see col. 5, lines 34-65) to couple IC package to the substrate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Scholz into the device taught by Debenham since it would be desirable to add functionality to the device. Further, the combination of Debenham and Scholz discloses the claimed invention except for not disclosing that the electrically conductive material are from a group consisting of wire wads, pins, blobs, lumps, particles *and* crystals. Scholz discloses bumps or blobs or lumps or particles (col. 5, lines 38-53). Scholz does not explicitly disclose wire wads or pins or crystals. However, wire wads, pins and crystals are well known conductive elements in the art. For example, Smolley discloses wire wads comprising of a compressible material (e.g. Abstract) for packaging construction for electronic circuit package elements, such as integrated circuit chip

Art Unit: 2111

packages, to obviate the need for the use of solder. It would have been obvious to one of ordinary skill in the art to use compressible wads of conductive wire as taught by Smolley in the Scholz system because Smolley states that such wire wads offer high density, solderless assembly, high frequency performance and operation over a wide temperature range. The wire wads additionally offer very low resistance to current when their exposed ends are compressively engaged with surface contact pad areas. Furthermore, because of their ratio of diameter to length in compressed state is considerably larger than contacts previously known in the connector art and because of their random internal multi-contact composition, such wadded conductor elements have relatively low capacitance and inductance, and so they provide relatively low impedance for dynamic electronic circuit configurations, such as are used for high speed data processing and other high bandwidth applications; therefore, being advantageous. In another example, Akkapeddi discloses that it is known to provide pins within holes or vias in a plastic spacer (abstract). Further in another example, Kuozkowski and Kang et al. disclose that it is known to utilize electrically conductive crystals or particles in the polymer layer as to form electrical interconnections between electrical contacts on adjacent surfaces (Kang; abstract). Hence, it would have been obvious to one of ordinary skill in the art to utilize electrically conductive crystals as taught by Kuozkowski and Kang in the system of Scholz because it would produce a higher electrical conductivity and can be processed at a lower temperature additionally it is environmentally safe and low in cost (col. 3, lines 45-55).

As per claims 57, Scholz discloses wherein the connector comprises a plurality of electrically conductive elements (e.g. conductive bumps 58 and 60) couple lands (input/output

Art Unit: 2111

pads 48 and 50) on the die (46) to the corresponding lands (traces 54 and 56) on the substrate (52) [see col. 5, lines 34-65 and col. 6, lines 32-54];

As per claim 58, Scholz discloses a compression element (compression means; col. 6, lines 47-54] to maintain electrical contact between the lands on the die or IC package and the lands on the substrate.

10. Claims 59-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scholz (USPN 5,329,423) in view of Smolley (USPN 4,581,679 or 4,574,331).

As per claims 59, 63, 65, and 69; Scholz teaches an electronic package (e.g. Figs. 3 & 4) comprising: an IC package (46); a substrate (substrate 52); and a compressible connector (elements 48,50,54,56,58,60,62,64,66,68,70,72,74,76,78; see col. 5, lines 34-65) to couple the die or IC package to the substrate; wherein the connector comprises a flexible support formed of electrically insulating material (e.g. 70 and 78; see col.5, lines 43-53); and a plurality of elements form of electrically conductive material (e.g. bumps and socket layer; col. 5, lines 38-53); except for not disclosing that the connector includes a plurality of wire wads. Scholz discloses bumps or blobs or lumps or particles or buttons (col. 5, lines 38-53). Scholz does not explicitly disclose wire wads. However, wire wads are well known conductive elements in the art. For example, Smolley discloses wire wads comprising of a compressible material (e.g. Abstract; col. 3, lines 32-45; col. 4, lines 49-67 – col. 5, lines 1-17; figs. 1 and 2) for packaging construction for electronic circuit package elements, such as integrated circuit chip packages, to obviate the need for the use of solder. It would have been obvious to one of ordinary skill in the art to use compressible wads of conductive wire as taught by Smolley in the Scholz system because

Art Unit: 2111

Smolley states that such wire wads offer high density, solderless assembly, high frequency performance and operation over a wide temperature range. The wire wads additionally offer very low resistance to current when their exposed ends are compressively engaged with surface contact pad areas. Furthermore, because of their ratio of diameter to length in compressed state is considerably larger than contacts previously known in the connector art and because of their random internal multi-contact composition, such wadded conductor elements have relatively low capacitance and inductance, and so they provide relatively low impedance for dynamic electronic circuit configurations, such as are used for high speed data processing and other high bandwidth applications; therefore, being advantageous.

As per claims 60, 66 and 70; Scholz discloses wherein the connector comprises a plurality of electrically conductive elements (e.g. conductive bumps 58 and 60) couple lands (input/output pads 48 and 50) on the die (46) to the corresponding lands (traces 54 and 56) on the substrate (52) [see col. 5, lines 34-65 and col. 6, lines 32-54];

As per claims 61, 67 and 71; Scholz discloses a compression element (compression means; col. 6, lines 47-54] to maintain electrical contact between the lands on the die or IC package and the lands on the substrate;

As per claim 62; wherein the compressing element is a lid (cap mechanism; col. 5, lines 56-58) comprising a member in contact with the die or IC package and a support coupled to the substrate (see col. 6, lines 47-54);

As per claims 64, 68 and 72; the combination of Scholz and Smolley teaches the claimed invention as detailed with respect to claims 59, 65 and 69. Scholz further teaches wherein the

Art Unit: 2111

insulating support is formed of material from the group consisting of a plastic, a resin, and a polymer (col. 3, lines 62 et seq; col. 4, lines 20-24).

11. Claims 59-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scholz (USPN 5,329,423) in view of Bourdelaise et al. (USPN 5,298,686; Bourdelaise).

As per claims 59, 63, 65, and 69; Scholz teaches an electronic package (e.g. Figs. 3 & 4) comprising: an IC package (46); a substrate (substrate 52); and a compressible connector (elements 48,50,54,56,58,60,62,64,66,68,70,72,74,76,78; see col. 5, lines 34-65) to couple the die or IC package to the substrate; wherein the connector comprises a flexible support formed of electrically insulating material (e.g. 70 and 78; see col.5, lines 43-53); and a plurality of elements form of electrically conductive material (e.g. bumps and socket layer; col. 5, lines 38-53); except for not disclosing that the connector includes a plurality of wire wads. Scholz discloses bumps or blobs or lumps or particles or buttons (col. 5, lines 38-53). Scholz does not explicitly disclose wire wads. However, wire wads are well known conductive elements in the art. For example, Bourdelaise discloses wire wads comprising of a compressible material (e.g. Abstract; Fig. 5, e.g. col. 3, lines 1-25; col. 6, lines 1-67; col. 7, lines 1-67) for packaging construction for electronic circuit package elements, such as integrated circuit chip packages, to obviate the need for the use of solder. It would have been obvious to one of ordinary skill in the art to use compressible wads of conductive wire as taught by Bourdelaise in the Scholz system because Bourdelaise teaches that such wire wads offer high density, solderless assembly, high frequency performance and operation over a wide temperature range. The wire wads additionally offer very low resistance to current when their exposed ends are compressively engaged with surface

Art Unit: 2111

contact pad areas. Furthermore, because of their ratio of diameter to length in compressed state is considerably larger than contacts previously known in the connector art and because of their random internal multi-contact composition, such wadded conductor elements have relatively low capacitance and inductance, and so they provide relatively low impedance for dynamic electronic circuit configurations, such as are used for high speed data processing and other high bandwidth applications; therefore, being advantageous.

As per claims 60, 66 and 70; Scholz discloses wherein the connector comprises a plurality of electrically conductive elements (e.g. conductive bumps 58 and 60) couple lands (input/output pads 48 and 50) on the die (46) to the corresponding lands (traces 54 and 56) on the substrate (52) [see col. 5, lines 34-65 and col. 6, lines 32-54];

As per claims 61, 67 and 71; Scholz discloses a compression element (compression means; col. 6, lines 47-54] to maintain electrical contact between the lands on the die or IC package and the lands on the substrate;

As per claim 62; wherein the compressing element is a lid (cap mechanism; col. 5, lines 56-58) comprising a member in contact with the die or IC package and a support coupled to the substrate (see col. 6, lines 47-54);

As per claims 64, 68 and 72; the combination of Scholz and Smolley teaches the claimed invention as detailed with respect to claims 59, 65 and 69. Scholz further teaches wherein the insulating support is formed of material from the group consisting of a plastic, a resin, and a polymer (col. 3, lines 62 et seq; col. 4, lines 20-24).

Art Unit: 2111

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached Form PTO-892.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to XUAN M. THAI whose telephone number is 703-308-2064. The examiner can normally be reached on Monday to Friday from 8:30 A.M. to 5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 703-305-4815. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.



XUAN M. THAI
Primary Examiner
Art Unit 2111

XMT
February 6, 2004